DECEMBER, 1904 NUMBER 33

The University of North Carolina

RECORD

CONTAINING

Suggestions to Teachers Concerning the Preparation of Students

PUBLISHED BY THE UNIVERSITY

ENTERED AS SECOND CLASS MATTER AT THE POSTOFFICE

AT CHAPEL HILL, N C

DECEMBER, 1904 NUMBER 33

The University of North Carolina

THE RECORD

CHAPEL HILL, N. C.
PUBLISHED BY THE UNIVERSITY
1904

THE UNIVERSITY PRESS
CHAPEL HILL

THE UNIVERSITY RECORD.

Number 33. Fifty Cents a Year. December, 1904.

REQUIREMENTS FOR ADMISSION.

All candidates for admission into the Freshman Class must offer preparation in English, in Mathematics, in History; and, in addition, in the subjects designated in one of the following groups:

Group 1. Latin; Greek.
Group 2. Latin *or* Greek; French *or* German; Physics.
Group 3. French; German; Physics.

When applicants have had no preparation in Greek or in French or in German or in Physics, the requirement may be satisfied by pursuing the corresponding courses in College. But each course will not then be counted as any part of the requirement for the bachelor's degree.

Candidates for admission into the Freshman Class are received by examination or by certificate. Entrance examinations are held in September. Students who present certificates of work accomplished at preparatory schools or colleges may be admitted without examinations, provided that the certificates are approved. The right to examine, however, is reserved when such a course is deemed necessary.

Certificates must be made out on the printed forms furnished on application to the Registrar, and must be deposited with that officer, duly approved, before the work can be officially credited.

Subjects Accepted for Entrance.

Eight subjects may be offered for entrance into the University. Applicants for admission to the course leading to the bachelor's degree are required to offer five or six of these subjects, according to the group of studies to be pursued after admission.

The requirements in each of these eight subjects are as follows:—

1. GREEK. Three books of Xenophon's Anabasis, with questions on the more usual forms and constructions; simple narrative in English, based upon Xenophon's Anabasis, to be translated into Greek.

2. LATIN. Two books of Caesar's Gallic War; four orations of Cicero; six books of Virgil's Aeneid; Latin Grammar, including prosody; simple narrative in English, based upon the prose read, to be translated into Latin.

3. *ENGLISH. I. Grammar. Elements of Rhetoric.
II. Literature.

(*a*) For reading:—Shakespeare's The Merchant of Venice and Julius Caesar; The Sir Roger de Coverley Papers in The Spectator; Goldsmith's The Vicar of Wakefield; Coleridge's Ancient Mariner; Scott's Ivanhoe; Carlyle's Essay on Burns; Tennyson's The Princess; Lowell's The Vision of Sir Launfal; George Eliot's Silas Marner.

(*b*) For study and practice:—Shakespeare's Macbeth; Milton's L'Allegro, Il Penseroso, Comus, and Lycidas; Burke's Speech on Conciliation with America; Macaulay's Essays on Milton and Addison.

The candidate is expected to have sufficient knowledge of the books grouped under (*a*) to enable him to answer general questions on their substance. The form of the examination will be the composition of paragraphs on a number of topics connected with the works. The ability of the candidate to

*These requirements are uniform with those of the leading colleges in the United States.

express his ideas in clear accurate English is a main consideration. No applicant should present himself who is notably deficient in spelling, grammar, or paragraphing. Under group (*b*) are enumerated the works that are to be carefully studied. The questions will be upon subject matter and structure.

4. History. Either of the following courses:

(*a*) The histories of the United States, Greece and Rome, as outlined in the best text-books for high schools.

(*b*) The histories of the United States and England, as outlined in the best text-books for high schools.

5. Mathematics. A good working knowledge of Arithmetic, including fundamental operations (particularly on common and decimal fractions), compound numbers, percentage, interest and extraction of the square root. Problems that are much more easily solved by Algebra are not included here. The whole of a high school Algebra, and a college Algebra to quadratics. The first three books of Plane Geometry. In 1907 and thereafter, the whole of Plane Geometry will be required.

6. German. A thorough knowledge of the inflections, including the most common strong verbs; acquaintance with the ordinary laws of German syntax; such facility in translation as is gained by a careful study of at least 150 duodecimo pages of ordinary modern German prose; ability to translate into German simple sentences based on the passage assigned for examination; accurate pronunciation.

7. French. Similar to the requirements stated for German, save that the applicant should have read at least 200 duodecimo pages of ordinary modern French prose.

8. Physics. The whole of an ordinary course such as is contained in Carhart and Chute's High School Physics or its equivalent, embracing the work of at least one session of nine months.

Fuller explanation of the foregoing requirements, with examples of entrance conditions, are included in this pamphlet for the information of teachers. Students who are deficient in a small part of a subject are admitted conditionally, provided their preparation is satisfactory in other subjects. These conditions must be removed before the beginning of the Sophomore year. If not so removed, the student may not continue work in the department in which he is conditioned. And work done in that department may not be counted toward his degree until all conditions are removed.

In the hope of aiding the schools and inspiring closer relations between the teachers and the departments of the University, the following statements are printed. They are intended to present the essentials of preparatory instruction, necessary for a proper coordination of the two branches of education. It is hoped, also, that teachers will correspond with members of the faculty of the University in regard to text-books, methods, and any matter about which they may desire information, advice, or other assistance.

Preparation in English.

Each year a majority of the applicants for entrance into Freshman English at the University are conditioned. A large per cent. of these lack the literature requirement only; but many of them are not able to write exercises involving an elementary knowledge of rhetoric. The candidates for admission do not seem to have devoted themselves to English as they have to the other branches; as a result more students are conditioned on this study than on the classics and mathematics combined. English requires not less diligent study than Latin and Greek.

The use of clear and correct English is the end to which a preparatory course should be directed. Knowledge of grammar and the science of rhetoric a student may have, and still lack ability to express his ideas in even tolerable language.

A graduate of the high school should be able to write simple narrative and description with ease; yet, so far from having this facility of expression, the preparation of a theme is to many students otherwise well prepared a matter of considerable embarrassment, if not an almost impossible task.

The first two years in English at the University are devoted largely to composition. To prepare for this work the student should have constant practice in writing. Formal drill in rhetoric will not remove the natural awkwardness or prevent even the most flagrant errors. The only method of learning English composition is by constantly composing.

The paragraph is the unit of composition and there is no better method of self-discipline in English than the practice of reading a paragraph of good prose and then, with closed book, attempting to reproduce it. Teachers and students should remember that the main consideration is accuracy in details. If the student learns how to write one page *perfectly*, he is better prepared for Freshman English than if he had brought to college a hundred pages of his own writing correct only in spots. Experience and observation alike prove that if such details as spelling, the use of capitals, of quotation marks, of the possessive sign, indention at the beginning of every paragraph, a regard for the mechanical appearance of the written page, an instinctive feeling for the difference between a whole sentence and a fragmentary sentence, are not learned before coming to college, they rarely become permanent acquisitions afterwards.

Teachers are urged to have their students memorize both prose and verse, and in every case to have them reproduce in writing the memorized selections with scrupulous attention to the details already enumerated. If the practice is kept up of reproducing in written English what has been read or mem orized, the student will become almost independent of grammars and rhetorics. He will have learned English where the masters themselves learned it; that is, at first hand.

The requirements in literature embody the joint efforts of

the best high schools, colleges, and universities in the United States. They represent also all the more common forms or types of literary art, such as the drama, the lyric, the elegy, the epic, the masque, the oration, the character sketch, the 18th century novel, the 19th century novel, and the essay, thus giving ample room for parallel reading and for the specialized study of literary types in more advanced courses.

All of the masterpieces required are published in well edited and inexpensive form by The Macmillan Co. (N. Y.), Ginn and Co. (N. Y.), Henry Holt & Co. (N. Y.), and other leading publishing houses. A postal card will bring all necessary information.

EXAMINATION IN ENGLISH.

I. a. Write a page of memorized prose or verse.
   b. Classify the verbs in the selection as strong or weak, and give their three principal parts.

II. a. Contrast description and narration.
   b. Name from your reading some noted examples of description and narration.

III. a. Compare the main teaching of *The Ancient Mariner* with that of *The Vision of Sir Launfal.*
   b. What light is thrown on Addison's character by *The Sir Roger de Coverley Papers?*
   c. Name with brief descriptive phrases the leading characters in (1) *The Merchant of Venice*, (2) *The Vicar of Wakefield*, and (3) *Silas Marner.*

IV. a. Sketch the life of Milton.
   b. Give three of Burke's arguments for conciliation.

V. a. Can you mention any good points in the characters of Lady Macbeth and Shylock?
   b. What does Macaulay think was the chief work (1) of Milton, (2) of Addison?

VI. a. Write a paragraph contrasting *L'Allegro* and *Il Penseroso.*

b. Tell where the following quotations are found, and explain the meaning of each:

(1) "I dare do all that may become a man;
Who dares do more is none."

(2) "There's husbandry in heaven;
Their candles are all out."

(3) "He that has light within his own clear breast
May sit i' th' center and enjoy bright day;
But he that hides a dark soul and foul thoughts
Benighted walks under the midday sun."

(4) "Then to the well-trod stage anon,
If Jonson's learned sock be on,
Or sweetest Shakespeare, Fancy's child,
Warble his native wood-notes wild."

Preparation in Greek.

In most cases a student has studied Latin one or two years before beginning Greek. Either language is a great help to him in the other. Nobody can be a scholar, in the best sense, in either Latin or Greek unless he has studied both.

When a student leaves the preparatory school, he is expected to know the grammatical forms of nouns, adjectives, pronouns, and verbs; the leading principles of syntax; to have acquired a reasonably good vocabulary of Greek words; to be able to read ordinary Greek with some readiness; and to turn simple English sentences into Greek. This is not very much, but one who knows this ought to have little trouble in his further study of Greek.

Two years should be devoted to preparation. A bright student may, however, by using the summer vacation for completing his studies, finish nearly all of his preparatory Greek in one year. If he has not read all of the required three books of the Anabasis, the deficiency may be made good by private study during his Freshman year.

Of the introductory books, Ball's *The Elements of Greek* (Macmillan), Gleason and Atherton's *First Greek Book* (Amer-

ican Book Co.), and White's *First Greek Book* (Ginn and Co.), are very good. Any of the books recommended contains everything that teacher and student will need to consider during the first term of the study of Greek.

Babbitt's *Grammar of Attic and Ionic Greek*, and Hadley-Allen's *Greek Grammar*, both published by the American Book Co., are clearest in statement and arrangement, and best for use. Teachers who prefer to use a reader and grammar, instead of an introductory book, will find Moss's *First Greek Reader* (Allyn and Bacon), and Colson's *First Greek Reader* (Macmillan) excellent books. Good school editions of the Anabasis are Goodwin and White's (Ginn and Co.), Harper and Wallace's (American Book Co.), and Kelsey's (Allyn and Bacon).

It is of the greatest importance that the beginner should at once become familiar with the appearance and sounds of Greek words. He should, therefore, have constant practice in pronunciation from the very start. Time will be saved by devoting a large part of the earlier recitations to pronunciation. Most of the supposed difficulty of Greek is due to the learner's uncertainty about the pronunciation of Greek words. Practice will remove this difficulty.

In all things, accuracy should be insisted upon. Frequent reviews are necessary. Everything about a language cannot be taught in connection with any one lesson. A few things should be prepared with special care each day or week. In this way, all of the more important principles can be covered in a short time, and applied to the text read.

The verb is supposed to be hard to learn. Perhaps it is hard. But there is almost no form of the verb that does not bear on its face the signs of what it is and where it is. Students should be taught to observe these signs. Themes, tense suffixes, mood-signs, personal endings, augment, reduplication, etc., ought to be understood perfectly. The student can easily be trained to locate at sight almost any form of the verb.

The introductory books contain enough exercises for preparatory instruction in prose composition. It is a good plan to have the class turn back into Greek the translation which they have made of their reading lesson.

The absolute mastery of a small vocabulary is necessary in any language. Two or three hundred of the commonest words can be selected and committed to memory. Students get into the habit of looking up the meaning of words which they know already. All of the commonest words occur so often that there is no reason for not recognizing them. For example, Xenophon uses more than ten times in the first three books of the Anabasis ninety-four verbs, sixty-two nouns and twenty-six adjectives,—to say nothing of the pronouns, prepositions, conjunctions and common adverbs. All of these can be thoroughly learned in a few weeks, or in a few years. It is just as easy to learn them in a few weeks, and considerably better. Some practice in reading easy Greek at sight will test and strengthen the student's vocabulary. The New Testament (Westcott and Hort's edition, Harper and Brothers, or the Macmillan Co.) is excellent for use in sight reading.

Students should be taught to translate each word in the order in which it stands in the Greek sentence. This is essential to progress, and is the natural way to arrive at the true meaning. In recitation, the translation should, of course, be given in the best English.

EXAMINATION IN GREEK.

I. Translate Anabasis, Book I, vii, 3.
   a. Decline ἄνδρες, ἀνθρώπων, ὑμᾶς, ἐλευθερία.
   b. Explain the case of ἀνθρώπων, and of βαρβάρων (line 3).
   c. Account for the mood and tense of ἔσεσθε.

II. Translate Book II, v, 31 and 32.
   d. Decline πολλῷ, ταῦτα, τινές, ἱππέων.
   e. Inflect παρεκλήθησαν, ἔμενον, ἐντυγχάνοιεν. Write a synopsis of the first aorist active of παιδεύω.

III. Translate Book 3, III., 1.

f. Locate ἀνέστησαν, ἀπελθόντες, δέοιτο, ἔρχεται, καλεσάμενος.

g. Explain the case of τούτων, ὅτου.

IV. Write in Greek:

When Darius died, Artaxerxes, his elder son, became king, and arrested his brother, Cyrus, on the ground that (ὡς) he was plotting against him. Cyrus, however, was begged off by his mother and sent back to his province. There he planned to make war on his brother.

Preparation in Latin.

The requirements for entrance in Latin are:

1. Grammar—the declensions, conjugations and the more usual usages of the cases, moods and tenses.
2. Caesar—two books.
3. Cicero—four orations.
4. Vergil—six books.
5. Latin composition.

Suggestions to teachers of preparatory Latin may well emphasize features of the work known to be good and may also present others which, it seems, will be fortunate additions to the methods usually followed with beginners. And emphasis should first be given the necessity for an exact and facile knowledge of the declensions and conjugations and the more frequently recurring uses of the cases, moods and tenses. The student may not hope to read the language with ease and quickness of understanding until he is master of the forms and the various meanings which these forms may have. As soon as the word is before the eye, the mind should know the case, mood or tense and all its possible uses. And exactness should be the aim, as well as quickness. In certain studies it would be an error to mistake a brick for a piece of quartz. But it is not less an error to confuse two case forms or two

uses of a mood or tense. Exactness in observing forms and facility for determining their meaning are essentials for successful work in Latin. This mastery of the language and this exactness of habit cannot be secured without effort. There is no easy method of learning Latin and there never will be. He alone will be able to read with facility who, in the beginning, has been taught exactly and carefully the forms of the language and their use in syntax. No method which attains that end can be old-fashioned.

Correct habits of pronunciation should be secured with the beginner. If the proper sounds are used in learning the paradigms, if the accent be rightly placed at this time, the habit will be followed. And differences in quantity should also be observed. The long vowels are not the same or even similar to the short; they are different letters. Hence the teacher should insist that twice as much time be taken for the long as for the short. In reading the hexameter verse also, there can be no success unless the difference between long and short is carefully observed. The Roman method of pronunciation should always be used.

There is another difficulty which should be carefully presented to the beginner. This is the arrangement of words. The Latin is more elastic than the English and admits of greater variety in the position of the elements of the sentence. But the Latin order is rational and presents the thought often in the best possible way. Hence all successful reading must be done in the order of the original. In no other way can it become facile. Let the student understand the sentence as it stands, reading it by its thought units and without transposition or any disarrangement of the order. When all the thoughts are thus understood, they may then be restated in simple English. This method is successfully taught by reading aloud easy sentences, presenting but one thought at a time and allowing the student to see the meaning in the order of the original. And if all the thought is clear to him without the necessity of translation, the method is most highly successful.

It is wise to avoid carrying the beginner into the first book of Caesar, after the preliminary study is completed. A book of selections may be substituted successfully. Among the best of these may be mentioned Ginn & Co.'s second Year Latin, and Allyn & Bacon's Junior Latin book. Each of these books has selections from Caesar equal to the amount required for entrance. In beginning Caesar the second book is wisely chosen.

And after the reading of continuous narrative has begun, attention should be given to translation at sight. By this method the student is given greater facility in recognizing the forms, the syntax of words, and finally the meaning of the sentence. The student should also be taught to detect the meaning of a word from its position in the sentence, from association of similarity to an English derivative. This will aid the student to master the small vocabulary necessary to easy reading.

Practice in prose composition should be begun as soon as the simplest principles of grammar have been mastered, and continued throughout the period of preparation. This is the best possible drill in the forms and syntax of a language. It is also a decided aid to the acquiring of a reading vocabulary. Among the best books for the purpose are Collar & Daniel's Beginner's Latin Book (Ginn & Co.), Bennett's Foundations of Latin (Allyn & Bacon) and Abbott's First Latin Book (American Book Co.). It is well, too, to have the student put into Latin passages which he has translated into English from Caesar or from the reading book used in substitution for Caesar.

Finally the study of Latin should always be associated with the lives of the people who spoke it. Emphasis should be given to history, geography, manners and customs, and, in general, the great contribution made by Rome to civilization.

EXAMINATION IN LATIN.

I. 1) Translate Caesar, B.G. II., 7.

2) Explain the construction of *ducibus*, *subsidio*, *vicis*, *passuum*, *fumo*.
3) Decline *ducibus*, *spes*, *oppidi*, *quae*.
4) Give the principal parts of *mittit*, *potuerant*, and the imperfect subjunctive of *significabatur*.

II. 1) Translate Cic. Cat. II., 8, to *adferam*.
2) Account for the mood of *possit* in each of the clauses where it occurs.
3) What incident in the history of the conspiracy of Cataline is referred to in the words *murus interest*?

III. 1) Translate Verg. Aen. IV., 160-168.
2) What point does the narrative reach with these lines?
3) Write out verses 160,161, divide into feet, mark the caesura, and explain the quantity of each syllable.

IV. Translate into Latin:

When Cn. Pompeius and M. Crassus were consuls, the Usipetes and the Tencteri crossed the river Rhine with a great force of men. The Suebi, who were by far the greatest and most warlike tribe of the Germans, were opposing them. The Suebi lead forth from their boundaries every year thousands of armed troops for the sake of making war. Those who remain at home support these and themselves. Then after a year those who have remained at home are led out under arms.

Preparation in Mathematics.

The requirements for entrance into the Freshman class in Mathematics are:

(1) A good working knowledge of Arithmetic, including fundamental operations (particularly on common and decimal

fractions), compound numbers, percentage, interest, and extraction of square root.

Problems that are much more easily solved by Algebra are not included here.

(2) The whole of a high school Algebra and a College Algebra to Quadratics.

(3) The first three books of Plane Geometry. (In 1907 and thereafter the whole of Plane Geometry.)

The principal aim in preparing students in these subjects should be to give them facility in those operations constantly required in the future course, with strict attention to the analysis and logic involved.

In fact, one of the principal objects in a college course in Mathematics is to train the mind to strict, logical methods of thought and absolute precision of statement, and it is very necessary for the student's further progress, that especial emphasis be laid upon these features before entering the University.

Geometry has, for centuries, found a place in college curricula, because of the strict logical form in which it was originally cast, and one aim in writers of the most recent text-books on Algebra is to make it, like Geometry, a course in elementary logic.

Therefore those books only should be used in Algebra which consider, from the start, minus as well as plus quantities and give complete demonstrations of the principle involved. Students whose idea of algebra is limited to finding the value of x in some example or problem, begin to flounder when general demonstrations are met with where numbers are represented entirely by letters.

For text-books, Fisher and Schwatt's Secondary Algebra, Taylor's or Dickson's Algebra, and Wentworth's High School Algebra are mentioned as being particularly serviceable in preparing students for the University.

In Geometry, Wells's or Wentworth's well known books are

practical texts. Beman and Smith's Geometry, too, is a scientific book with many excellent features.

As a guide to the instructor, "The Teaching of Elementary Mathematics", by D. E. Smith, is recommended.

The examinations for entrance are sometimes written, at other times oral, and may vary according to the testimonial brought by the student.

The examinations cover the whole ground mentioned, the subjects being changed from time to time, however, particularly if the examination is oral.

As an average examination, the following may suffice as an illustration.

ARITHMETIC.

1) Reduce to a decimal fraction

$$\frac{\frac{1}{2} - \frac{2}{5}}{\frac{2}{3} + \frac{3}{5}}$$

2) Find amount of $341.50 for 3 yrs., 2 mos., 7 days @ 6 per cent.

3) State rules for pointing off in multiplying and dividing decimal fractions.

ALGEBRA.

1) Find x and y, given:

$$\begin{aligned} x + y + z &= 1 \\ 2x + 3y + z &= 4 \\ 4x + 9y + z &= 16 \end{aligned}$$

2) Extract the square root of,

$$1 + 4x + 10\,x^2 + 12\,x^3 + 9x^4$$

GEOMETRY.

1) Prove that if the non parallel sides of a trapezoid are equal, its diagonals are equal.

2) Two triangles are similar when their homologous sides are proportional.

Preparation in History.

The student may prepare on either of the following groups:

a. The histories of the United States, and of Greece and Rome.

b. The histories of the United States, and of England.

It is advisable to prepare on the first rather than the second group. It is necessary that the student have a rather thorough, though elementary, acquaintance with the leading facts and movements in the history of the American people. The political, social, economic, constitutional, military and literary aspects, should all receive consideration. The following text-books are suggested: Johnston's *High School History of the United States*, McLaughlin's *History of the American Nation*, Montgomery's *Student's American History*, Channing's *Student's History of the United States*, or an equivalent. The histories of Greece and Rome should be considered in the same aspects as mentioned above. The following text-books are suggested: Botsford's *History of Greece*, Botsford's *History of Rome*, Botsford's *Ancient History for Beginners*, Myers's *History of Greece*, Myers's *Rome; its Rise and Fall*, West's *Ancient History*, Seignobos's *History of the Roman People*, or an equivalent.

In case the student prefers to prepare on English History in place of Grecian and Roman, he should study the life and development of the English people from the same phases as already suggested. Coman and Kendal's *History of England*, Montgomery's *English History*, or an equivalent will be expected.

Preparation in French and German.

The benefit which pupils ultimately derive from the study of French and German depends largely upon the work of the first teacher. That work should be definite and thorough. It is wise to proceed slowly. The period of preparation may

profitably embrace two full school years with at least four recitations per week.

With young people and at the beginning of the study, good results may be obtained from conversational methods, followed later by systematic study of grammar and translation. But unless the teacher speaks the foreign language fluently, it is unwise to attempt conversation. In any case, it will always be possible to give simple oral exercises based, if necessary, upon the exercises in the grammar, and such exercises, no matter how simple, are to be strongly recommended.

Let accurate pronunciation be taught at the beginning and fixed by constant practice.

The teaching of the grammar should proceed by easy stages, with oral practice, written exercises and frequent reviews. Particular attention ought to be given to the verb. After the various tenses have been learned separately, with a definite meaning for each form, paradigms should be studied as a whole, in order to show the relations of the modes and tenses. The pupil should know all the irregular French verbs, the German strong verbs, and modal auxiliaries. In the case of the subjunctive mode, it will be sufficient to give clearly a few simple explanations based on a comparison with the indicative mode, showing in general that statements made in the subjunctive, (except those expressing a wish), lack independence and directness, or actually contain an inference of unreality.

Simple translation may begin after the grammar has been studied two or three months, and then the two should proceed together. In the second year most of the time should be devoted to translation. The grammar may then be profitably reviewed by written exercises carefully corrected and explained.

The amount of translation required is at least 200 duodecimo pages of French and 150 duodecimo pages of German prose. Good translation is accurate, idiomatic translation,

The following text-books are suggested:

FRENCH.—One of the best grammars for beginners is Joynes's *Minimum French Grammar* (Holt & Co.). For advanced students Fraser and Squair's *French Grammar* (Holt & Co.) is recommended. The former gives succinct and clear statements of the elements of grammar, with a limited amount of exercises in pronunciation and prose composition, while the latter treats more fully the syntax of written and oral exercises for the appreciation of the modern phonetic method of acquiring an accurate pronunciation of French.

For early reading, Chateaubriand's *Le Dernier Abencerage* (American Book Co.), an interesting short story, and Feuillet's *Le Jeune Homme Pauvre* (Heath & Co.), an idealistic novel, are suggested.

GERMAN.—German Lessons (Collar's Eysenbach, Ginn & Co., Boston), is especially useful for oral practice; Joynes-Meissner's Grammar, Part I (D. C. Heath & Co., Boston), and Thomas' Grammar, Part I (Henry Holt & Co., N. Y.,) give a more extensive treatment; Bierwirth's Beginning German (Henry Holt & Co.) is short but excellent; Ball's Drill Book (D. C. Heath & Co.) may be used with other grammars.

Glück Auf (Ginn & Co.), is good for early reading; Hewett's Reader (MacMillan & Co.); Harris' Reader, Thomas' Reader (the last two published by Henry Holt & Co.); Höher Als die Kirche; Der Zerbrochene Krug; Immensee (the last three published by D. C. Heath & Co.)

Preparation in Physics.

Students who expect to include Physics among the subjects offered for entrance should complete some such text-book as Gage's "Elements of Physics", Carhart and Chute's "High School Physics", or Nichols's "The Outlines of Physics". In no case should the book be more elementary than one of these.

The laws and principles studied should be illustrated with experiments done by the teacher in the presence of his students, and the solution of numerous problems should be required.

EXAMINATION IN ELEMENTARY PHYSICS. (FALL TERM.)

1. (a) What is the relation between mass and weight? How are the masses of two bodies compared? (b) Give an illustration of the inertia of matter.

2. An iron ball is dropped from a railroad trestle. How long will it take the ball to reach the ground 40 feet below? Suppose the trestle is straight and horizontal and that a train running west 30 feet a second crosses it. Then if the ball is dropped from the rear platform, when and where will it strike the ground? Illustrate with a diagram the path of the falling ball.

3. State Newton's laws of motion.

4. Why would a given body weigh less at the equator than at either of the poles?

5. If a pendulum 1 metre long beats seconds, what is the vibration period of a pendulum 0.04 of a metre long? How long must a pendulum be to make one beat in 5 seconds? What is the relation between the time of vibration of a pendulum and the distance through which it swings?

6. What force is needed to roll a 400 pound cylinder up an inclined plane of length 16 feet and height 12 feet, when the force acts parallel to the length of the plane? How much work would be done in this process? How much energy expended? How much energy gained?

7. (a) How is it that we gain force in using the hydraulic press? (b) Define *specific gravity* and show how the specific gravity of a solid may be determined.

8. Explain the construction and operation of a suction pump.

9. How does sound originate and how is it carried from one place to another?

10. Upon what does the intensity of sound depend? The pitch? The quality? What is the relation of wave-length to vibration frequency and velocity?

3 0112 105882390

Announcements

THE Fall Term of the University of North Carolina will begin September 11, 1905.

Commencement will be on May 31, 1905.

The Summer Law School, June 7–August 18, 1905.

The Summer School for Teachers, June 12–July 7, 1905.

For the Catalogue or for detailed information, address

FRANCIS P. VENABLE, PRESIDENT

UNIVERSITY OF NORTH CAROLINA

CHAPEL HILL